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Title : DOES SUCCINYLCHOLINE RAISE INTRACRANIAL PRESSURE?

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Introduction. Marx[1] and Sondergard[2] reported succinylcholine (SCC) increased cerebrospinal fluid pressure measured at the lumbar spine. In this study intracranial pressure (ICP) following SCC was measured in dogs with decreased cerebral compliance, secondary to a mass lesion.

Methods. Adult mongrel dogs were anesthetized with thiopental 22mg/kg (N=5) or pentobarbital 20mg/kg (N=2). The animals were intubated and placed on a Harvard ventilator. The ventilator settings were adjusted to maintain normal canine blood gases: F_IO_2 .21 $PaO_2$80 to 95 torr $PaCO_2$ 30 to 34 torr and pH 7.34 to 7.39. Aortic, pulmonary artery, pulmonary capillary wedge, and central venous pressures; and EKG were recorded. An intracranial Richmond Bolt was placed to measure ICP. A Foley catheter was inserted over the cerebral motor area through a burr hole. The hole was sealed with methylmethacrylate. Two experiments were performed on each animal. In the first experiment the Foley catheter balloon was filled with increments of fluid to increase the ICP to 30 torr. This required 12 to 15ml of fluid. Two hours were allowed for the ICP to accomodate to the mass lesion. At this time the ICP had returned to normal. Intravenous SCC 0.05mg/kg was injected and the above parameters were recorded. In the second experiment, 2ml of fluid was added to the intracranial balloon one hour after the muscle twitch response from the first experiment had returned to normal. Immediately after this increase in balloon size, SCC 0.05mg/kg was administered.

Results. The ICP in neither experiment changed following SCC. Also, there were no changes in hemodynamic parameters except for tachycardia.

Discussion. The paralyzing dose of SCC is much lower for dogs than humans.[3] Consequently, the relatively small dose of 0.05mg/kg produced fasciculations and total paralysis in all animals. The work of Marx[1] and Sondergard[2] could reflect well documented increased intra-abdominal pressure following SCC.[4] Additionally, the CSF pressure changes reported by Sondergard[2] could be due to light anesthesia and/or increased $PaCO_2$. Gordon's[5] case report of increased ICP by intraventricular measurement is temporally associated with intubation, a well known cause of increased ICP.

We conclude that in barbiturate anesthetized dogs SCC does not increase ICP even when it is acutely elevated or the intracranial compliance is decreased.

References.

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